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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/934,640	08/22/2001	William R. Ryan	3419-011158	9272

EXAMINER
MCHENRY, KEVIN L

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/934,640	RYAN, WILLIAM R.	
	Examiner	Art Unit	
	Kevin L McHenry	1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 October 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *28-31,42-44,47,49 and 50* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *28-31 and 47* is/are allowed.

6)☒ Claim(s) *42-44,49 and 50* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 49, 43, 44, and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 56-71,595.

JP 56-71,595 teaches a process of forming a joint for a heat exchanger in which a first metallic member, or tube, with a first thickness and a first lip is joined to a second metallic member, or tube plate, of a second thickness. As shown in figures, this reference suggests that the second thickness is greater than the first thickness. This joining is accomplished by placing the first lip within a second lip of the second metallic member so that a tip of the first lip extends beyond the second lip. The tip and the second member adjacent the tip are heated by TIG welding torch to melt the tip and second member adjacent the tip to form a fluid tight welded joint upon cooling (see JP 56-71,595; particularly Figures 6-7; and abstract).

JP 56-71,595 does not specifically teach that the thickness of the tube is greater than the thickness of the tube plate, as suggested in the figures of JP 56-71,595.

It would have been obvious to one of ordinary skill in the art at the time that the applicant's invention was made to have made the thickness of the tube plate greater than that of the tubes. One would have been motivated to do so in order to provide a

tube plate that would be structurally strong, could support its on weight and that of the tubes attached to it, and would provide a strong structural support for a heat exchanger.

3. Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 56-71,595 as applied to claims 49, 43, 44, and 50 above, and further in view of Blumenberg (U.S.P. 4,369,911).

JP 56-71,595 teaches the process noted above in section 2. However, JP 56 71,595 does not teach the use of flame welding.

Blumenberg teaches a process of welding a tube to a sleeve by using flame or arc welding (see U.S.P. 4,369,911; particularly Figure 2; column 1, lines 36-42, 63-68).

It would have been obvious to one of ordinary skill in the art at the time that the applicant's invention was made to have used flame welding, as taught by Blumenberg, as opposed to arc welding, as taught by JP 56-71,595, in light of the art recognized functional equivalence of flame and arc welding (i.e. both are suitable methods for welding a tube to a sleeve).

4. Claims 49 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 54-69,537 in view of Blumenberg (U.S.P. 4,369,911) or Ohnishi (U.S.P. 4,550,872).

JP 54-69,537 teaches process of forming a join in which a first metallic member, or tube, with a first thickness and a first lip is joined to a second metallic member, or tube plate, of a second thickness. As shown in figures, this reference suggests that the second thickness is greater than the first thickness. This joining is accomplished by placing the first lip within a second lip of the second metallic member so that a tip of the

first lip extends beyond the second lip. The tip and the second member adjacent the tip are welded to melt the tip and second member adjacent the tip to form a fluid tight welded joint upon cooling (see JP 54-69,537; particularly Figures 1, 2; and abstract).

JP 54-69,537 does not specifically teach that the thickness of the tube is greater than the thickness of the tube plate, as suggested in the figures of JP 54-69,537, or that welding is accomplished by flame welding or any particular type of welding.

Blumenberg teaches a process of welding a tube to a sleeve by using flame or arc welding (see U.S.P. 4,369,911; particularly Figure 2; column 1, lines 36-42, 63-68).

Ohnishi teaches a process of welding a pipe to a surface by using a flame welding (see U.S.P. 4,550,872; particularly Figure 2; column 3, lines 6-18).

It would have been obvious to one of ordinary skill in the art at the time that the applicant's invention was made to have made the thickness of the tube plate greater than that of the tubes. One would have been motivated to do so in order to provide a tube plate that would be structurally strong, could support its on weight and that of the tubes attached to it, and would provide a strong structural support for a heat exchanger. It would have been obvious to one of ordinary skill in the art to have used flame welding to join the tube and tube plate taught by JP 54-69,537 via flame welding in order to provide a means for joining a tube or pipe to a surface, as taught by Blumenberg or Onishi.

5. Claims 49, 43, 44, and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tank et al. (U.S.P. 4,036,293) in view of JP 56-71,595.

Tank et al. teaches a heat exchanger for a gas turbine that includes a metal

recuperator with U-shaped pipes that are welded to a collecting chamber. (See U.S.P. 4,036,293; Figures 1 and 3; column 1, lines 5-13; column 4, lines 3-22).

Tank et al. does not teach that the pipes and collecting chamber have different thicknesses.

JP 56-71,595 teaches a process of forming a joint for a heat exchanger in which a first metallic member, or tube, with a first thickness and a first lip is joined to a second metallic member, or tube plate, of a second thickness. JP 56-71,595 teaches that this process makes a weld that is not polluted by active gas and is not fragile. As shown in figures, this reference suggests that the second thickness is greater than the first thickness. This joining is accomplished by placing the first lip within a second lip of the second metallic member so that a tip of the first lip extends beyond the second lip. The tip and the second member adjacent the tip are heated by TIG welding torch to melt the tip and second member adjacent the tip to form a fluid tight welded joint upon cooling (see JP 56-71,595; particularly Figures 6-7; and abstract).

It would have been obvious to one of ordinary skill in the art at the time that the applicant's invention was made to have modified the recuperator of Tank et al. by the teachings of JP 56-71,595. One would have been motivated to do so in order to make a weld joint that is not polluted by active gas and is not fragile, as taught by JP 56-71,595. It would have been obvious to one of ordinary skill in the art to have made the thickness of the collecting chamber of Tank et al. greater than that of the tubes. One would have been motivated to do so in order to provide a tube plate that would be structurally strong, could support its on weight and that of the tubes attached to it, and would provide a strong structural support for a heat exchanger.

6. Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tank et al. (U.S.P. 4,036,293) in view of JP 56-71,595 as applied to claims 49, 43, 44, and 50 above, and further in view of Blumenberg (U.S.P. 4,369,911).

The former references teach the process noted above in section 5. However, they do not teach the use of flame welding.

Blumenberg teaches a process of welding a tube to a sleeve by using flame or arc welding (see U.S.P. 4,369,911; particularly Figure 2; column 1, lines 36-42, 63-68).

It would have been obvious to one of ordinary skill in the art at the time that the applicant's invention was made to have used flame welding, as taught by Blumenberg, as opposed to arc welding, as taught by JP 56-71,595, in light of the art recognized functional equivalence of flame and arc welding (i.e. both are suitable methods for welding a tube to a sleeve).

Allowable Subject Matter

7. Claims 28-31 and 47 are allowed.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Heyn et al. (U.S.P. 3,602,296), Troy (U.S.P. 3,782,457), and Darragh (U.S.P. 5,060,721) are cited of interest for illustrating the state of the art heat exchanger design.

Response to Arguments

10. The applicant did not make any specific arguments along with the amendment of 21 October 2003. The examiner notes the use of "recuperator" in new claims 49 and 50. However, the examiner also notes that a recuperator is a heat exchanger with pipes joined to a collector chamber or manifold, as shown by Tank et al. (See U.S.P. 4,036,293; column 1, lines 5-13). Therefore, the heat exchangers taught by JP 56-71,595 and JP 54-69,537 read upon "recuperator" in its broadest sense.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin L McHenry whose telephone number is (571) 272-1181. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas G Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin McHenry

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5/19/04